INTERNATIONAL TRADE ADMINISTRATION

Coal News and Trends

August 2008

Upcoming Web-Based Seminars:

- ***Improving Your Bottom Line with Ethanol***
  August 12, 2:00 pm Eastern Time

  On August 12 at 2:00 pm EDT, the Office of Energy and Environmental Industries and the Office of Aerospace and Automotive Industries will host a free web-based seminar on 'Improving Your Bottom Line with Ethanol.' This seminar will provide U.S. petroleum retailers with information on 1) the current market for E-85, 2) ethanol conversion logistics, 3) government programs that advance E-85 ethanol distribution, and 4) the opportunities and challenges for U.S. retailers of E-85. The presentations will be led by representatives from the U.S. automotive industry, the ethanol fuel distribution sector, the U.S. Department of Energy, and the gasoline retail sector. For additional information or to register for the event, please contact Shannon.Fraser@mail.doc.gov, 202-482-3609.

Upcoming Events:

- **Bluefield Coal Symposium, August 26-27, Bluefield, WV**
  The Bluefield Coal Symposium will provide an overview of 1) industrial coal mine safety programs, 2) regional mining legislation, and 3) recent mining technology developments. For additional information on the program agenda, please refer to http://www.bluefieldchamber.com/csinformation.htm

- **Electra Mining, September 8-12, Johannesburg, South Africa**
  Electra Mining Africa is targeted towards equipment producers, traders, service and product suppliers, and representatives from mining and smelting plants. This event serves as the second largest mining show worldwide. Representatives from the International Trade Administration will coordinate pre-arranged meetings between U.S. new-to-market companies and South African companies. Please contact Johan.vanRensburg@mail.doc.gov for additional information.

- **MINExpo International, September 22-24, Las Vegas, NV**
  Occurring every four years, the MINExpo event will take place from September 22-24 in Las Vegas and will include educational seminars, mining equipment displays, and optional site visits. The Department of Commerce will coordinate foreign buyer delegations to attend the conference and will arrange for one-on-one meetings between Foreign Service coal and mining trade specialists and U.S. company representatives to discuss the expansion of business opportunities in a targeted overseas market. For additional information, please refer to http://www.minexpo.com/tours.shtm?id=2 or contact Shannon Fraser at Shannon.Fraser@mail.doc.gov, 202-482-3609.

- **International Pittsburgh Coal Conference, September 29-October 2, Pittsburgh, PA**
  The Twenty-Fifth Annual International Pittsburgh Coal Conference will focus on environmental emissions issues and technologies surrounding the continued use of coal and the development of future coal-based energy plants to achieve near-zero emissions of pollutants. For additional information on this year's program, please refer to http://www.engr.pitt.edu/pcc/2008%20Conference.htm

Policy Analysis:

DOE Regional Partnerships Find New Use for Unmined Coal

Researchers Team Greenhouse Gas Mitigation and Coalbed Methane Extraction in Unmined Coal Field

http://fossil.energy.gov/news/techlines/2008/08026-Regional_Partnerships_Tap_Unmined_Coal.html

July 17, 2008

Washington, D.C. – The Midwest Geological Sequestration Consortium (MGSC), one of seven regional partnerships created by the U.S. Department of Energy to advance carbon sequestration technologies, has begun injecting carbon dioxide (CO2) in a groundbreaking field project in Wabash County, Ill. The project represents a promising strategy for safely storing this greenhouse gas while simultaneously increasing natural gas production in the region.

The pioneering project is the first of the Regional Carbon Sequestration Partnerships to inject carbon dioxide into a coal seam in the United States.

The Phase II pilot project, headed by the Office of Fossil Energy's National Energy Technology Laboratory (NETL) and the Illinois and Indiana State Geological Surveys, is testing the viability of turning unmined coal deposits into a source of useable energy by extracting natural gas, specifically coalbed methane, trapped in the coal. The bituminous coals of the Illinois Basin have a high content of methane, making the Wabash County site a choice location for the project. The Illinois State Geological Survey estimates that there is up to 3.6 billion tons of storage capacity and over 10 trillion cubic feet of recoverable coalbed methane from unmined coal seams in the Illinois Basin.

Traditionally, operators drill production wells and, in a process called dewatering, pump water out of the coals to extract the gas. MCSG scientists are turning this research pilot project into a two-for-one opportunity by coupling the gas extraction with CO2 sequestration. Dewatering does not work well with carbon sequestration; it limits the amount of CO2 that can be sequestered because the dewatering process creates a low-pressure environment for the injected CO2 that reduces storage capacity.

The Wabash County project eliminates the need for dewatering. The project is designed to use one injection well and three production wells. Trucked-in CO2 is pumped through a heater and injected into the coal seam as a gas, increasing the pressure underground and desorbing the coalbed methane. Methane and CO2 make perfect partners; CO2 is preferentially absorbed, meaning that, as the CO2 flows through the coal seam, methane is displaced from the surface of the coal in favor of the CO2.

This method presents a major challenge: coal swelling. As CO2 is injected, coal swells to absorb the gas. CO2 molecules are larger than methane, and the coal can absorb three molecules of CO2 for every molecule of methane that is released. Injecting too much CO2 at once can lower the permeability of the coal, and it has the potential to reduce the injection rate and limit the overall amount of CO2 that can be injected and sequestered into the seam.

To alleviate coal swelling, MGSC scientists are field testing a new approach: injecting the CO2 in pulses or cycles. CO2 is injected for 8- to 24-hour periods followed by a similar duration of shut-in to let the CO2 soak. At the end of the test, researchers anticipate up to 250 tons of CO2 to be injected over 3 months.

In addition to the benefits of enhanced methane recovery, this project will also help demonstrate that geologic sequestration is a safe and permanent method to mitigate greenhouse gas emissions into the atmosphere. The Wabash County project will monitor the injected CO2 both in the lab and in the field, measuring changes in CO2 injectivity, the amount of CO2 that is retained by the coal, and the amount of methane gas that is displaced by CO2.

The project is one of six small-scale pilot field tests being conducted by the MGSC during the current validation phase of the Regional Carbon Sequestration Partnerships program, which is managed by NETL. During this phase, field tests are being conducted to validate the most promising sites to deploy sequestration technologies. In addition to the Wabash County coalbed-methane project, other field tests are determining the ability of some oil fields to sequester CO2 while enhancing oil production, and others are examining the injection of CO2 into saline formations a mile or more below the surface.

The MGSC is one of seven regional partners in a nationwide network to help determine the best approaches for capturing and permanently storing gases that can contribute to global climate change. Led by the Illinois State Geological Survey at the University of Illinois, the MGSC, in coordination with the Indiana and Kentucky Geological Surveys, is investigating CO2 sequestration options for the 60,000 square mile Illinois Basin, a subsurface geologic feature which underlies most of Illinois, western Indiana, and western Kentucky.

NETL Innovations Capture Two R&D 100 Awards

Technologies Among Most Significant New Products Worldwide

http://fossil.energy.gov/news/techlines/2008/08025-NETL_Captures_Research_Awards.html

July 10, 2008

Washington, D.C. – Sorbents to reduce pollutants from coal-fired power plants and a software tool that can be used to design advanced power plants with reduced cost, time, and technical risk have earned R&D 100 Awards for the Office of Fossil Energy's National Energy Technology Laboratory (NETL).

The annual awards, which are selected by an independent panel of judges and the editors of *R&D Magazine*, are presented to the 100 most technologically significant products to enter the marketplace in the past year. According to *R&D Magazine*, the judges look for products and processes "that can change people's lives for the better" and "improve the standard of living for large numbers of people." NETL's sorbents and software were developed as part of the laboratory's quest to provide clean, affordable, abundant, and secure energy for future generations of Americans.

"This is yet the latest example of how the Department of Energy and the National Laboratories are continuing to demonstrate world-class leadership in innovation, as we enhance our energy security, national security and economic competiveness," said James Slutz, Acting Principal Deputy Assistant Secretary for Fossil Energy.

The award-winning NETL sorbents capture mercury, arsenic, and selenium at high temperature at various stages in the integrated gasification combined cycle (IGCC) process. Compared to low-temperature capture by activated carbons, high-temperature capture of these trace elements retains the high thermal efficiency of IGCC power plants, which form part of a strategy to increase the use of the nation's abundant domestic coal reserves. The palladium-based sorbents have been licensed to Johnson Matthey, a world leader in catalyst manufacture, for commercial development and application.

NETL's Advanced Process Engineering Co-Simulator (APECS) is a one-of-a-kind software tool that provides high-fidelity process and equipment co-simulation together with seamless data/model management throughout a power plant's lifecycle. The process and energy industries can deploy APECS - which is built on the integrated access, workflow, and data services of the ANSYS Engineering Knowledge Manager(TM) as a complete engineering solution to foster rapid technology development, reduce design times for pilot- and demonstration-scale facilities, and lower the cost and technical risk in realizing the high-efficiency, near-zero emission plants of the future.

The award winners will be featured in the September issue of *R&D Magazine* and honored at an awards banquet in October at Chicago's Navy Pier.